

Jonathan M. Moch

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Education and Honors

HARVARD UNIVERSITY

Ph.D., Earth and Planetary Sciences with Secondary Field in Science, Technology and Society

Ph.D. Expected 2019

S.M., Environmental Science and Engineering

November 2016

Research Advisors: Loretta Mickely, Ph.D.; Daniel Jacob, Ph.D.

- American Geophysical Union Fall Meeting Outstanding Student Presentation Award, 2017
- Switzer Environmental Fellowship, 2017 – 2018
- National Science Foundation Graduate Research Fellowship, 2014 – Present
- Harvard Stonington Graduate Fellowship of Environmental Science and Engineering, 2014 – 2015

PRINCETON UNIVERSITY

June 2012

A.B., *magna cum laude*, Geosciences with primary Certificate (co-major) in The Woodrow Wilson School of Public and International Affairs. Additional Certificates (minors) in Environmental Studies and in Chinese Language and Culture

Research Advisors: David Medvigy, Ph.D.; Tullis Onstott, Ph.D.; Michael Oppenheimer, Ph.D.

- Awarded the Edward Sampson, Class of 1914, Prize in Environmental Geosciences for distinguished work for Senior Thesis, *Permafrost and Global Climate Change: Novel Models and Policy Implications*
- Elected to Society of Sigma Xi (International Honor Society for Science and Technology)

Experience

HARVARD UNIVERSITY, DEPARTMENT OF EARTH AND PLANETARY SCIENCES

August 2014 – Present

Graduate Research Fellow: Atmospheric Chemistry Modeling Group

Cambridge, MA

Graduate Research Fellow: Harvard China Project

Conduct and assist with research on interactions between climate change and atmospheric chemistry

- Examining formation and climatic effects of black carbon and brown carbon aerosols
- Investigating climatic and chemical mechanisms behind extreme air pollution events in China

CHINESE ACADEMY OF SCIENCES, INSTITUTE OF ATMOSPHERIC PHYSICS

Summer 2016

Harvard Global Institute Visiting Graduate Research Fellow

Beijing, China

Collaborated with Chinese researchers on interactions between climate change and atmospheric chemistry

Research Advisors: Hong Liao, Ph.D.

- Examined the effects of future reductions in Chinese aerosols on regional climate
- Compiled and analyzed data on Chinese air pollution and climate

WORLD RESOURCES INSTITUTE (WRI), CHINAFAQs PROJECT

March 2013 – June 2014

ChinaFAQs Project Specialist

Washington, DC

Worked with expert network to provide objective, fact-based information on China's energy and climate policies and the implications of such policies and actions to U.S. policy makers and the media

- Created content including issue briefs, blogs and fact sheets
- Identified and analyzed scientific and policy data derived from multiple sources.
- Helped plan and participated in meetings with policy makers and presented data
- Liaised between WRI offices in Washington and Beijing; assisted with development and coordination of cross-country projects to promote understanding of climate and energy policies

PRINCETON UNIVERSITY, DEPARTMENT OF GEOSCIENCES

June 2012 – March 2013

Research Associate

Princeton, NJ

Refined models for methane emissions from Arctic tundra that were developed as part of Senior Thesis.

- Work served as the basis for Oh et al., 2016, A scalable model for methane consumption in arctic mineral soils, *Geophysical Research Letters* (<http://onlinelibrary.wiley.com/doi/10.1002/2016GL069049/full>)

NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION (NOAA)

GEOPHYSICAL FLUID DYNAMICS LABORATORY

Summer 2011

Research Associate, Princeton Environmental Institute/Grand Challenges Intern

Princeton, NJ

Research Advisors: Jorge Sarmiento, Ph.D.; Thomas Frölicher, Ph.D.; Keith Rodgers, Ph.D.

- Performed climate modeling research using then unpublished GFDL Earth System Models; characterized and quantified the carbon cycle-climate feedbacks of the model and examined the model's uncertainties in order to refine the understanding of and predictions about the behavior of the atmosphere, the oceans and the climate
- Work assisted with GFDL's submission to the IPCC's 5th Assessment Report

Relevant Competencies and Coursework:

- Working level fluency in business and science Chinese – oral and written
- *Geosciences and Environmental Studies*: Physics of Climate • Environmental Modeling • Atmospheric Chemistry • Climate Dynamics • Planetary Radiation and Climate • Environmental Geochemistry • Atmospheric Science • Physical Oceanography • Sea Level Change • Organic Chemistry • Global Air Pollution • Environmental Decision Making
- *Woodrow Wilson School and John F. Kennedy School*: Climate Change: Scientific Basis, Policy Implications • Disease Ecology, Economics and Policy • Ethics and Public Policy • Social Policy Making • International Relations • Democracy • Environmental Economics and Policy • Science, Power and Politics

Activities, Teaching, and Leadership:

- ChinaFAQs Network Expert for World Resources Institute (2014-2018)
- Harvard GSAS Science Policy Group: Co-President (2018-Present); Vice-President (2017-2018); Faculty Chat Coordinator (2015-2017)
- Atmospheric Chemistry Journal Club co-organizer (2016-2018)
- Teaching Fellow, Energy and Climate: Visions for the Future (Spring 2017)
- Teaching Fellow, China's Energy Economy: Perspectives from the Past: Challenges for the Future (Fall 2015)
- 4-Year Varsity Athlete, Princeton Varsity Fencing Team: Foil; Ivy League Champions (2010, 2012); NCAA Team 2nd place finish (2012); personal undefeated season (2009-2010)
- Co-Founder, Princeton College Democrats Environmental Caucus: Organized campus events and outreach to Senators and Congressmen regarding the Waxman-Markey Climate Legislation (2009)
- Obama Campaign Dorm Captain: Organized and conducted voter registration drive for students (Fall 2008); Obama Campaign worker (Fall 2008)
- Princeton Peer Advisor: Guided underclassmen with course selection and academic advice (2010-2012)
- Princeton Peer Tutor: Helped students with Geosciences courses (2010-2012)

Select Publications and Presentations:

- **Moch, J.M.**, E. Dovrou, L.J. Mickley, F.N. Keutsch, Y. Cheng, D.J. Jacob, J. Jiang, M. Li, J.W. Munger, X. Qiao, Q. Zhang, (2018). Contribution of hydroxymethane sulfonate to ambient particulate matter: A potential explanation for high particulate sulfur during severe winter haze in Beijing. *Geophysical Research Letters*.
- Leung, D.M., A.P.K. Tai, L.J. Mickley, **J.M. Moch**, A. van Donkelaar, L. Shen, R.V. Martin (2018). Synoptic meteorological modes of variability for fine particulate matter (PM_{2.5}) air quality in major metropolitan regions of China. *Atmospheric Chemistry and Physics*
- **Moch, J.**, (2016). Clean Air, Cool Climate: Solving these problems together. ChinaFAQs. Washington DC: World Resources Institute.
- Li, K., H. Liao, J. Zhu, **J.M. Moch** (2016). Implications of RCP emissions on future PM_{2.5} air quality and direct radiative forcing over China. *Journal of Geophysical Research: Atmospheres*.
- Oh, Y., B.T. Stackhouse, M.C.Y. Lau, X. Xu, A.T. Trugman, **J.M. Moch**, T.C. Onstott, C.J. Jørgensen, L. D'Imperio, B. Elberling, C.A. Emmerton, V.L. St.Louis, D. Medvigy, (2016). A scalable model for methane consumption in arctic mineral soils. *Geophysical Research Letters*.
- **Moch, J.** and S. Forbes, (2013). Recent Progress Shows China's Leadership on Carbon Capture and Storage. ChinaFAQs. Washington DC: World Resources Institute.
- **Moch, J.**, (2013). 4 Promising Themes Emerge in U.S.-China Agreements at Strategic and Economic Dialogue. ChinaFAQs. Washington DC: World Resources Institute.
- **Moch, J.**, (2013). U.S.-China Collaboration: Can They "Inspire the World"? ChinaFAQs. Washington DC: World Resources Institute.
- **Moch, J.**, B.T. Stackhouse, M.C.Y. Lau, D. Medvigy, and T.C. Onstott, (2012). Modeling CH₄ emissions from Arctic tundra: Processes behind emissions pulses and the potential for a negative feedback. Poster presentation at AGU 2012 Fall Meeting, December 3-7, San Francisco, California.
- Lau, M.C.Y., B.T. Stackhouse, **J. Moch**, K. Chourey, R.L. Hettich, T. Vishnivetskaya, S. Pfiffner, A. Layton, N. Mykytczuk, L. Whyte and T.C. Onstott, (2012). Identifying active CH₄-oxidizers in thawed Arctic permafrost by proteomics. Poster presentation at AGU 2012 Fall Meeting, December 3-7, San Francisco, California.
- **Moch, J.**, (2012). Permafrost and Global Climate Change: Novel Models and Policy Implications. Undergraduate Senior Thesis. Princeton University, Department of Geosciences.
- **Moch, J.**, K. Rodgers, T. Frolicher, and J. Sarmiento, (2011). Quantifying Carbon Cycle-Climate Feedbacks with the GFDL Earth System Model. Presentation at Princeton University Energy Grand Challenges Symposium, October 7, Princeton, New Jersey.